

AMENDMENT LIST NUMBER 7 TO
TECHNICAL SPECIFICATION
FOR IGC-APPROVED GNSS FLIGHT RECORDERS

EFFECTIVE 31 DECEMBER 2004
ISSUED BY FAI
ON BEHALF OF THE INTERNATIONAL GLIDING COMMISSION

Amendment page, page (i)

The GNSS committee has been re-named the Air traffic, Navigation and Display Systems (ANDS) committee. Change the second para to: Amendments should be proposed to the Chairman of the IGC Air traffic, Navigation and Display Systems (ANDS) Committee (ex IGC GNSS Committee) and to the Chairman of GFAC. This can be done either by direct contact or through the FAI Secretariat. For the FAI address, see the Preliminary Remarks page after the contents list that follows. The proposal should include the reason for the change and a form of words suitable for direct incorporation in this document. (AL7)

Preliminary remarks, page (iv)

Second para to have reference to the newly-re-named ANDS committee and to start as follows: This document is intended for FR manufacturers, potential manufacturers and any other organisation or individual interested in the detailed specification of IGC GNSS FRs. This includes officials who deal with GNSS matters in IGC, FAI and NACs, members of the IGC GFA and ANDS committees and their advisors, also producers of analysis programs for IGC flight data.

Other references to GNSS committee

Change to ANDS committee. Other references occur on page (iv) and para 1.3.5.

Glossary

Add: ANDS - Air traffic, Navigation and Display Systems, a committee of IGC previously called the GNSS Committee. (AL7)

USB - Universal Serial Bus. A system of self-powered rectangular connectors used in PCs and PC peripherals. The male USB A type is about 12 x 4mm in cross-section, fitting into the USB female connectors ("receptacles") that are included on most PCs. The USB B type is more square in shape and the male is about 8 x 6mm, fitting into peripherals such as printers. Miniature USB-B connectors ("mini-B") are also available and are used with smaller devices such as cameras. Some USB-B connectors may be used with FRs, see para 2.7.2.2.7.3 of this document and for general information see www.usb.org. (AL7)

Waypoint. Last sentence to read: The area concerned is within the clockwise angle between two radials originating from the point and a minimum and maximum distance from the WP. (Based on Sporting Code Section 3 Annex A Part 7, description of Assigned Areas). (AL7)

Chapter 1

Replace with latest version of Chapter 1 of Annex B to the code. This has amendments agreed by the IGC Plenary and includes the procedures for lowering of IGC-approval levels that have been agreed with the IGC Bureau. Note that because Annex B was re-issued in a new third edition in 2002, what appears in Annex B as AL1 and 2 is changed in the Specification document to AL6 and 7 to conform with the amendment dates and numbers in the Specification.

Chapter 2

2.6.3.1 to read: Preservation of memory data. The design shall preserve memory data so that flight data is preserved with time and can be transferred to a PC during that time. The design should take into account conditions of impact (for instance, accidental dropping of the recorder), damage, and crash. Wherever possible, non-volatile memory should be used that does not depend on a sustainer battery for retention of data. If a sustainer battery is used, its position and wiring to the memory unit should be made as secure as possible with respect to impact or other damage. An individual recorder unit must have a system that is capable of maintaining the internal security system for that recorder for at least one year without application of external power and either be re-charged on application of external power or be capable of sustaining the security system for at least 2 years. (AL7)

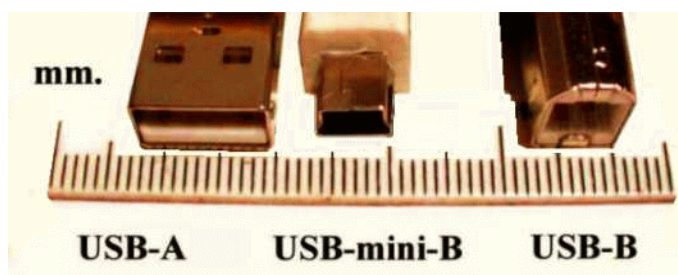
2.7.2.2.2 Antenna Cable. Change sentence 5 to the following and delete existing sentence 5 and the rest of the para: "The IGC standard external antenna connectors on the FR case include the 9mm BNC bayonet, and, where a smaller connector is desired, either the SMC (Sub-Miniature type C) screw fitting with 4mm female and 3.5mm male components, or, where the manufacturer wishes to use the GPS receiver board connector directly, the push-pull MCX connector that is fitted to many GPS receiver boards. (AL7)"

2.7.2.2.7.2, there are two paras with this number, re-number the second one 2.7.2.2.7.3 and the next para 2.7.2.2.7.4

2.7.2.2.7.2, replace "TX" (pin 5) by "Data Out" and "RX" (pin 6) with "Data In".

2.7.2.2.7.3 New para allowing the option of USB connectors. Re-number subsequent sub-paras.

2.7.2.2.7.3 Option 3 - USB connectors. The connector on the recorder case may be a female Universal Serial Bus (USB) B-type receptacle, for connecting the recorder to a PC through a standard USB-B to USB-A cable. Wiring to the connector on the recorder case shall be to the USB standard (see www.usb.org). The recorder port shall be compatible with USB 1.1 and USB 2.0 devices. On the recorder, the receptacle shall be either a full-size USB series B receptacle (for which the male is about 8 x 6mm) or the 5-pin USB series mini-B receptacle for which the male is about 6 x 3mm with angled ends. See the photo that follows. (AL7)



Existing 2.7.2.2.7.4
replace "RX" (pin 4)
"TX" (pin 5) with "Data In".

(new 2.7.2.2.7.5),
by "Data Out" and

2.10 on pressure altitude calibration, delete last sentence that begins "On set-up ...". Reason: duplicated in 2.10.1.

2.11.1 ENL systems. Second sentence, replace "preferred " by "IGC standard". Last sentence, replace by: "However, in design, careful processing of the raw noise signal is required (frequency filtering and weighting) so that a MoP developing forward thrust always gives a characteristically high ENL value. Meanwhile, ENL values associated with normal gliding flight must be significantly lower, including

aerodynamically noisy areas of flight such as high speed and flight with canopy panels open under sideslip conditions. See under GFAC ENL testing below. (AL7)"

2.11.1.1 Replace existing para by: ENL Enabling. Where a motor glider Engine Noise (ENL) function is incorporated in a FR, it must be permanently enabled and it must not be possible to switch off. This is because in gliders without a motor, an ENL record has been found useful as additional evidence during flight analysis and vital in the case of collisions and other accidents. See also 2.6.3.1 on preservation of memory data. (AL7)

Appendix 1

3.6.5 Area Tasks. In second sentence, add "(radials)" after "true bearings".

4.1 B-record, table, lines on Press Alt and GNSS altitude, last column, last words to read: "valid characters 0-9 and negative sign "-". Negative values to have negative sign instead of leading (leftmost) zero. (AL7)"

Para 9.5, example of IGC file

I record to read: I 03 36 38 FXA 39 40 SIU 41 43 ENL CRLF

B-records. The FXA group is shown as four characters and should only be three. Delete the leading zero shown in this group on all B-record lines. This group is the third numerical group before the CRLF at the end of each B-record line. In the first B-record it appears as 0205, this should be 205, and so forth for the eight further B-records in the example.

K-record to read: K160248 00090 CRLF

Appendix 3

1.1.add: The DLLs must work with 32-bit MS Windows systems that are the normal operating systems of the types of PCs commonly used for downloading flight data shortly after flight including (but not exclusive to) Windows 98 and Windows XP home and professional editions. (AL7)

1.6 to be replaced by: Provision. The provision of these Windows-based DLLs by manufacturers became mandatory on 1 July 2004. This was to allow for problems reported in trying to run the non-Windows 'Short DOS programs' on current PCs. (AL7)

1.7 on exceptions from DLL programs, delete in toto because they are now mandatory.

----- AL7 ends -----